MSMSYTWTGALITPCSPEEEKLPINPLSNSLLRYHNKVYCTTTKSASLRAKKVTFDRMQVLDSYYDSVLKDIKL AASKVTARLLTMEEACQLTPPHSARSKYGFGAKEVRSLSGRAVNHIKSVWKDLLEDSETPIPTTIMAKNEVFCV DPTKGGKKAARLIVYPDLGVRVCEKMALYDITQKLPQAVMGASYGFQYSPAQRVEFLLKAWAEKKDPMGFSYDT RCFDSTVTERDIRTEESIYRACSLPEEAHTAIHSLTERLYVGGPMFNSKGQTCGYRRCRASGVLTTSMGNTITC YVKALAACKAAGIIAPTMLVCGDDLVVISESQGTEEDERNLRAFTEAMTRYSAPPGDPPRPEYDLELITSCSSN VSVALGPQGRRRYYLTRDPTTPIARAAWETVRHSPVNSWLGNIIQYAPTIWARMVLMTHFFSILMAQDTLDQNL NFEMYGAVYSVSPLDLPAIIERLHGLDAFSLHTYTPHELTRVASALRKLGAPPLRAWKSRARAVRASLISRGGR AAVCGRYLFNWAVKTKLKLTPLPEARLLDLSSWFTVGAGGGDIYHSVSRARPR

#### FIG. 1A

MSMSYTWTGALITPCGPEEEKLPINPLSNSLMRFHNKVYSTTSRSASLRAKKVTFDRVQVLDAHYDSVLQDVKR AASKVSARLLTVEEACALTPPHSAKSRYGFGAKEVRSLSRRAVNHIRSVWEDLLEDQHTPIDTTIMAKNEVFCI DPTKGGKKPARLIVYPDLGVRVCEKMALYDIAQKLPKAIMGPSYGFQYSPAERVDFLLKAWGSKKDPMGFSYDT RCFDSTVTERDIRTEESIYQACSLPQEARTVIHSLTERLYVGGPMTNSKGQSCGYRRCRASGVFTTSMGNTMTC YIKALAACKAAGIVDPVMLVCGDDLVVISESQGNEEDERNLRAFTEAMTRYSAPPGDLPRPEYDLELITSCSSN VSVALDSRGRRRYFLTRDPTTPITRAAWETVRHSPVNSWLGNIIQYAPTIWVRMVIMTHFFSILLAQDTLNQNL NFEMYGAVYSVNPLDLPAIIERLHGLEAFSLHTYSPHELSRVAATLRKLGAPPLRAWKSRARAVRASLIAQGAR AAICGRYLFNWAVKTKLKLTPLPEASRLDLSGWFTVGAGGGDIYHSVSHARPR

# FIG. 1B

MSMSYTWTGALITPCSAEEEKLPISPLSNSLLRHHNLVYSTSSRSASQRQRKVTFDRLQVLDDHYKTALKEVKE RASRVKARMLTIEEACALVPPHSARSKFGYSAKDVRSLSSRAIDQIRSVWEDLLEDTTTPIPTTIMAKNEVFCV DPAKGGRKPARLIVYPDLGVRVCEKRALYDVIQKLSIETMGSAYGFQYSPQQRVERLLKMWTSKKTPLGFSYDT RCFDSTVTEQDIRVEEEIYQCCNLEPEARKVISSLTERLYCGGPMFNSKGAQCGYRRCRASGVLPTSFGNTITC YIKATAAAKAAGLRNPDFLVCGDDLVVVAESDGVDEDRAALRAFTEAMTRYSAPPGDAPQPTYDLELITSCSSN VSVARDDKGRRYYYLTRDATTPLARAAWETARHTPVNSWLGNIIMYAPTIWVRMVMMTHFFSILQSQEILDRPLDFEMYGATYSVTPLDLPAIIERLHGLSAFTLHSYSPVELNRVAGTLRKLGCPPLRAWRHRARAVRAKLIAQGGK AKICGLYLFNWAVRTKTNLTPLPATGOLDLSSWFTVGVGGNDIYHSVSRARTR

FIG. 1C

MSMSYTWTGALVTPCAAEESKLPISPLSNSLLRHHNMVYATTTRSAVTRQKKVTFDRLQVVDSHYNEVLKEIKA RASRVKARLLTTEEACDLTPPHSARSKFGYGAKDVRSHSRKAINHISSVWKDLLDDNNTPIPTTIMAKNEVFAV NPAKGGRKPARLIVYPDLGVRVCEKRALHDVIKKLPEAVMGAAYGFQYSPAQRVEFLLTAWKSKKTPMGFSYDT RCFDSTVTEKDIRVEEEVYQCCDLEPEARKVITALTDRLYVGGPMHNSKGDLCGYRRCRASGVYTTSFGNTLTC YLKATAAIRAAGLRDCTMLVCGDDLVVIAESDGVEEDNRALRAFTEAMTRYSAPPGDAPQPAYDLELITSCSSN VSVAHDVTGKKVYYLTRDPETPLARAAWETVRHTPVNSWLGNIIVYAPTIWVRMILMTHFFSILQSQEALEKAL DFDMYGVTYSITPLDLPAIIQRLHGLSAFTLHGYSPHELNRVAGALRKLGVPPLRAWRHRARAVRAKLIAQGGR AKICGIYLFNWAVKTKLKLTPLPAAAKLDLSGWFTVGAGGGDIYHSMSHARPR

#### FIG. 1D

MSMSYTWTGALITPCAAEEEKLPINPLSNSLIRHHNMVYSTTSRSASLRQKKVTFDRVQVFDQHYQEILKEIKL RASKVQAKLLSVEEACDLTPSHSARSKYGYGAQDVRSHASKAVNHIRSVWEDLLEDSDTPIPTTIMAKNEVFCV DPSKGGRKPARLIVYPDLGVRVCEKMALYDVTQKLPQAVMGSAYGFQYSPTQRVEYLLKMWRSKKVPMGFSYDT RCFDSTVTERDIRTENDIYQSCQLDPVARRAVSSLTERLYVGGPMVNSKGQSCGYRRCRASGVLPTSMGNTITC YLKAQAACRAANIKDCDMLVCGDDLVVICESAGVQEDTESLRAFTDAMTRYSAPPGDAPQPTYDLELITSCSSN VSVAHDGNGKRYYYLTRDCTTPLARAAWETARHTPVNSWLGNIIMFAPTIWVRMVLMTHFFSILQSQEQLEKAL DFDIYGVTYSVSPLDLPAIIQRLHGMAAFSLHGYSPVELNRVGACLRKLGVPPLRAWRHRARAVRAKLIAQGGK AAICGKYLFNWAVKTKLKLTPLVSASKLDLSGWFVAGYDGGDIYHSVSOARPR

FIG. 1E

ATGTCAATGTCGTATACATGGACAGGCGCCTTGATCACTCCTTGTAGTCCCGAAGAGGAGAAGTTACCGATTAA CTAAAAAGGTAACTTTTGATAGGATGCAAGTGCTCGACTCCTACTACGACTCAGTCTTAAAGGACATTAAGCTA GCGGCCTCCAAGGTCACCGCAAGGCTCCTCACCATGGAGGAGGCTTGCCAGTTAACCCCACCCCATTCTGCAAG ATCTAAATATGGGTTTGGGGCTAAGGAGGTCCGCAGCTTGTCCGGGAGGGCCGTTAACCACATCAAGTCCGTGT GGAAGGACCTCCTGGAGGACTCAGAAACACCAATTCCCACAACCATTATGGCCAAAAATGAGGTGTTCTGCGTG GACCCCACCAAGGGGGGCAAGAAAGCAGCTCGCCTTATCGTTTACCCTGACCTCGGCGTCAGGGTCTGCGAGAA GATGGCCCTTTATGACATTACACAAAAACTTCCTCAGGCGGTGATGGGGGGCTTCTTATGGATTCCAGTATTCCC  ${\tt CCGCTCAGCGGGTAGAGTTTCTCTTGAAAGCATGGGCGGAAAAGAAGGACCCTATGGGTTTTTCGTATGATACCC}$ CGAGGAGGCCCACACTGCCATACACTCGCTAACTGAGAGACTTTACGTGGGAGGGCCTATGTTCAACAGCAAGG GCCAAACCTGCGGGTACAGGCGTTGCCGCGCCAGCGGGGTGCTCACCACTAGCATGGGGAACACCATCACATGC TACGTGAAAGCCTTAGCGGCTTGTAAAGCTGCAGGGATAATCGCGCCCACAATGCTGGTATGCGGCGATGACTT GGTTGTCATCTCAGAAAGCCAGGGGACCGAGGAGGACGAGCGGAACCTGAGAGCCTTCACGGAGGCTATGACCA GGTATTCTGCCCCTCCTGGTGACCCCCCAGACCGGAGTATGATCTGGAGCTGATAACATCTTGCTCCTCAAAT GTGTCTGTGGCGCTGGGCCCACAAGGCCGCCGCAGATACTACCTGACCAGAGACCCTACCACTCCAATCGCCCG GGCTGCCTGGGAAACAGTTAGACACTCCCCTGTCAATTCATGGCTGGGAAACATCATCCAGTACGCCCCGACCA TATGGGCTCGCATGGTCCTGATGACACACTTCTTCTCCATTCTCATGGCTCAAGACACGCTGGACCAGAACCTC AACTTTGAGATGTACGGAGCGGTGTACTCCGTGAGTCCCTTGGACCTCCCAGCTATAATTGAAAGGTTACATGG GCTTGACGCTTTTTCTCTGCACACATACACTCCCCACGAACTGACACGGGTGGCTTCAGCCCTCAGAAAACTTG GGGCGCCACCCCTCAGAGCGTGGAAGAGCCGGGCACGTGCAGTCAGGGCGTCCCTCATCTCCCGTGGGGGGAGA CCCGACCACGC

### FIG. 2A

ATGTCAATGTCCTACACATGGACAGGCGCCTTGATCACACCATGTGGGCCCGAAGAGGAGAAGTTACCGATCAA  $\verb|GCCGCCTCTAAGGTTAGTGCGAGGCTCCTCACGGTAGAGGAAGCCTGCGCGCTGACCCCGCCCACTCCGCCAA|$ ATCGCGATACGGATTTGGGGCAAAAGAGGTGCGCAGCTTATCCAGGAGGGCCGTTAACCACATCCGGTCCGTGT GGGAGGACCTCCTGGAAGACCAACATACCCCAATTGACACAACTATCATGGCTAAAAATGAGGTGTTCTGCATT GATCCAACTAAAGGTGGGAAAAAGCCAGCTCGCCTCATCGTATACCCCGACCTTGGGGTCAGGGTGTGCGAAAA GATGGCCCTCTATGACATCGCACAAAAGCTTCCCAAAGCGATAATGGGGCCCATCCTATGGGTTCCAATACTCTC TCAAGAAGCCAGAACTGTCATACACTCGCTCACTGAGAGACTTTACGTAGGAGGGCCCCATGACAAACAGCAAAG GGCAATCCTGCGGCTACAGGCGTTGCCGCGCAAGCGGTGTTTTCACCACCAGCATGGGGAATACCATGACATGT TACATCAAAGCCCTTGCAGCGTGTAAGGCTGCAGGGATCGTGGACCCTGTTATGTTGGTGTGGAGACGACCT GGTCGTCATCTCAGAGAGCCAAGGTAACGAGGAGGACGAGCGAAACCTGAGAGCTTTCACGGAGGCTATGACCA GGTATTCCGCCCCTCCCGGTGACCTTCCCAGACCGGAATATGACTTGGAGCTTATAACATCCTGCTCCTCAAAC GTATCGGTAGCGCTGGACTCTCGGGGTCGCCGCCGGTACTTCCTAACCAGAGACCCTACCACTCCAATCACCCG AGCTGCTTGGGAAACAGTAAGACACTCCCCTGTCAATTCTTGGCTGGGCAACATCATCCAGTACGCCCCCACAA TCTGGGTCCGGATGGTCATAATGACTCACTTCTTCTCCATACTATTGGCCCAGGACACTCTGAACCAAAATCTC AATTTTGAGATGTACGGGGCAGTATACTCGGTCAATCCATTAGACCTACCGGCCATAATTGAAAGGCTACATGG GCTTGAAGCCTTTTCACTGCACACATACTCTCCCCACGAACTCTCACGGGTGGCAGCAACTCTCAGAAAACTTG GAGCGCCTCCCCTTAGAGCGTGGAAGAGTCGGGCGCGTGCCGTGAGAGCTTCACTCATCGCCCAAGGAGCGAGG GAGCCGCCTGGATTTATCCGGGTGGTTCACCGTGGGCGCCGGCGGGGGGCGACATTTATCACAGCGTGTCGCATG CCCGACCCCGC

FIG. 2B

ATGTCAATGTCGTATACATGGACAGGCGCCTTGATCACACCATGTAGTGCTGAGGAGGAGAAACTGCCCATCAG CCCACTCAGCAATTCTTTGTTGAGACATCATAACCTAGTCTATTCAACGTCGTCGAGAAGCGCTTCCCAGCGTC AGAGGAAGGTTACCTTCGACAGACTGCAGGTGCTCGACGACCATTATAAGACTGCATTAAAAGGAGGTGAAGGAG CGAGCGTCTAGGGTGAAGGCCCGCATGCTCACCATCGAGGAAGCGTGCGCGCTCCTCCTCACTCTGCCCG GTCGAAGTTCGGGTATAGTGCGAAGGACGTTCGCTCCTTGTCCAGCAGGGCCATTGACCAGATCCGCTCCGTCT GGGAGGACCTGCTGGAAGACACCACAACTCCAATTCCAACCACCATCATGGCGAAGAACGAGGTGTTTTGTGTG GACCCCGCTAAAGGGGGCCGCAAGCCCGCTCGCCTCATTGTGTACCCTGACCTGGGGGTGCGTGTCTGTGAGAA ACGCGCCCTATATGACGTGATACAGAAGTTGTCAATTGAGACGATGGGTTCCGCTTATGGATTCCAATACTCGC CTCAACAGCGGGTCGAACGTCTACTGAAGATGTGGACCTCAAAGAAAACCCCCTTGGGGTTCTCATATGACACC CGCTGCTTTGACTCAACTGTCACTGAACAGGACATCAGGGTAGAAGAGGAGATATATCAATGCTGTAACCTTGA ACCGGAGGCCAGGAAAGTGATCTCCTCCCTCACGGAGCGCCTTTACTGCGGGGGCCCTATGTTCAACAGCAAGG GGTCGTGGTGGCTGAAAGTGACGGCGTCGATGAGGATAGAGCAGCCCTGAGAGCCTTCACGGAGGCTATGACCA GGTACTCTGCTCCACCCGGAGATGCCCCACAGCCCACCTATGACCTTGAGCTCATTACATCTTGCTCCTCTAAC GTCTCCGTAGCACGGGACGACAAGGGGAGGAGGTATTATTACCTCACCCGTGATGCCACTACTCCCCTAGCCCG CGCGGCTTGGGAAACAGCCCGTCACACTCCAGTCAACTCCTGGTTAGGTAACATCATCATGTACGCGCCTACTA TCTGGGTGCGCATGGTAATGATGACACACTTTTTCTCCATACTCCAATCCCAGGAGATACTTGATCGACCCCTT GACTTTGAAATGTACGGGGCCACTTACTCTGTCACTCCGCTGGATTTACCAGCAATCATTGAAAGACTCCATGG TCTAAGCGCATTTACGCTCCACAGTTACTCTCCAGTAGAGCTCAATAGGGTCGCGGGGACACTCAGGAAGCTTG TGGCCAGTTGGACTTGTCCAGCTGGTTTACGGTTGGTGTCGGCGGGAACGACATTTATCACAGCGTGTCACGTG CCCGAACCCGC

## FIG. 2C

ATGTCAATGTCGTATACATGGACAGGCGCCTTGGTAACACCTTGCGCGGCTGAGGAATCAAAGCTGCCAATTAG CCCCTGAGCAATTCACTTTTGCGCCATCACAATATGGTGTATGCCACGACCACCCGTTCTGCTGTGACACGGC AGAAGAAGGTGACCTTCGACCGCCTGCAGGTGGTGGACAGTCACTACAATGAAGTGCTTAAGGAGATAAAGGCA ATCAAAGTTCGGCTACGGGGCGAAGGATGTTCGGAGCCATTCCCGCAAGGCCATTAACCACATCAGCTCCGTGT GGAAGGACTTGCTGGACGACAACAATACCCAATACCAACAACAATCATGGCCAAAAATGAGGTCTTCGCTGTG AACCCAGCGAAGGGAGGTCGGAAGCCTGCTCGCCTGATCGTGTATCCGGATCTCGGGGTCCGGGTTTGCGAGAA GAGAGCGCTTCACGACGTCATCAAAAAACTGCCTGAGGCCGTGATGGGAGCCGCTTATGGCTTCCAATACTCCC CAGCGCAGCGGGTGGAATTTCTTCTGACTGCTTGGAAGTCGAAGAAGACCCCAATGGGGTTCTCTTATGATACC CGCTGCTTTGACTCCACTGTAACCGAAAAGGACATCAGGGTCGAGGAAGAGGTCTATCAGTGTTGTGACCTGGA GCCCGAAGCCCGCAAAGTCATCACCGCCCTCACAGATAGACTCTATGTGGGCGGCCCTATGCACAACAGCAAGG GAGACCTTTGTGGGTATCGGAGATGTCGCGCAAGCGGCGTCTACACCACCAGCTTCGGGAACACGCTGACGTGC AGTCGTCATCGCTGAGAGCGACGGCGTAGAGGAGGACAACCGAGCCCTCCGAGCCTTCACGGAGGCTATGACGA GATACTCGGCTCCCCAGGTGACGCCCGCAGCCAGCATATGACCTGGAACTAATAACATCATGTTCATCCAAC GTCTCAGTCGCGCACGACGTGACGGGTAAAAAGGTATATTACCTAACCCGAGACCCTGAAACTCCCTTGGCGCG AGCCGCATGGGAGACAGTCCGACACACTCCAGTCAATTCCTGGTTGGGAAACATCATAGTCTACGCTCCCACAA TATGGGTGCGCATGATATTGATGACCCACTTTTTCTCAATACTCCAGAGCCAGGAAGCCCTTGAGAAAGCACTC GACTTCGATATGTACGGAGTCACCTACTCTATCACTCCGCTGGATTTACCGGCAATCATTCAAAGACTCCATGG CTTAAGCGCGTTCACGCTGCACGGATACTCTCCACACGAACTCAACCGGGTGGCCGGAGCCCTCAGAAAACTTG GGGTACCCCCGCTGAGAGCGTGGAGACATCGGGCCCGAGCAGTCCGCGCTAAGCTTATCGCCCAGGGAGGTAGA TGCCAAACTCGATTTATCGGGTTGGTTTACGGTAGGCGCCGGCGGGGGAGACATTTATCACAGCATGTCTCATG CCCGACCCCGC

FIG. 2D

ATGTCAATGTCGTATACATGGACAGGCGCCTTGATAACACCATGTGCTGCGGAGGAGGAGAAGCTTCCAATAAA TCCTCTGAGCAACTCCCTCATAAGACACCATAACATGGTGTATTCCACCACATCACGCAGCGCCAGCCTCCGCC AGAAGAAGGTCACATTTGACAGAGTGCAAGTGTTCGACCAACATTACCAGGAAATACTAAAGGAGATTAAGCTT CGAGCGTCCAAGGTGCAGGCGAAGCTCTTATCCGTAGAGGAAGCCTGCGACCTCACACCATCGCACTCAGCCCG GTCCAAATATGGGTATGGTGCACAGGACGTTAGAAGCCATGCTAGCAAGGCCGTCAACCACATCCGCTCCGTGT GGGAGGACTTGCTAGAAGACTCTGATACTCCAATTCCCACAACCATCATGGCTAAGAATGAAGTCTTCTGCGTA GATCCGTCGAAGGGTGGACGCAAGCCGGCACGCTTAATAGTTTACCCAGACTTGGGCGTGCGGGTCTGCGAGAA GATGGCCCTATACGACGTCACGCAGAAGTTACCACAGGCCGTGATGGGTTCAGCATACGGATTCCAGTACTCCC  $\tt CCACCCAGAGGGTTGAGTACCTGCTCAAAATGTGGCGGTCAAAGAAGGTGCCTATGGGCTTTTCTTACGACACC$ AGGTGTTTTGATTCAACCGTCACTGAGCGGGACATCCGGACTGAGAACGACATCTATCAGTCTTGCCAGCTGGA TCCCGTAGCAAGGAGGGCAGTATCATCCCTAACGGAACGGCTCTACGTAGGCGGCCCCATGGTGAACTCCAAGG GACAGTCATGTGGCTACCGTAGATGCCGAGCCAGTGGGGTGCTGCCCACGAGCATGGGAAACACCATCACGTGC TATCTGAAGGCACAGGCCGCCTGCAGGGCGGCCAACATCAAGGACTGTGACATGTTGGTGTGCGGAGATGACTT AGTGGTCATTTGTGAGAGTGCTGGCGTCCAGGAGGACACTGAGTCACTGCGAGCATTCACGGATGCTATGACCA GGTACTCAGCTCCCCTGGAGACGCCCCGCAACCTACTTACGACCTTGAGCTCATAACATCATGCTCATCCAAT GTCTCCGTCGCCCACGATGGCAACGGGAAGAGATATTACTACCTCACACGTGACTGTACCACTCCACTTGCGCG GGCCGCCTGGGAGACAGCCCGCCACACTCCAGTCAACTCGTGGTTGGGCAACATCATTATGTTTGCCCCCACGA TATGGGTGCGTATGGTTCTGATGACCCATTTTTTCTCCATCCTCCAGTCACAAGAGCAATTGGAGAAAGCACTC GACTTTGACATCTATGGAGTGACCTATTCCGTCTCTCCACTTGATCTCCAGCAATCATTCAACGACTCCATGG CATGGCAGCATTTTCACTCCACGGATACTCTCCAGTTGAGCTCAATAGGGTAGGGGCTTGCCTCAGGAAACTTG GGGTGCCTCCCTTGCGAGCCTGGAGACATCGAGCCAGAGCTGTCAGAGCCAAACTCATTGCCCAAGGGGGGAAA GAGCAAGCTTGACTTATCAGGCTGGTTCGTGGCCGGCTACGACGGGGGGACATTTATCACAGCGTGTCCCAGG CTCGACCCCGT

FIG. 2E